

REMARKS

Claim 1 has been amended and claims 1-3 and 5-7 remain pending.

Claim Rejections under 35 U.S.C. §103

Claims 1, 2 and 4-5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over JP 11-100864 to Tanaka Hisao in view of U. S. Patent No. 6,502,896 to Nakata et al.

Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over JP 11-100864 to Tanaka Hisao as modified by U. S. Patent No. 6,502,896 to Nakata in view of U. S. Patent No. 6,669,272 to Ayabe et al.

Claims 6 and 7 stand rejected under 35 USC 103(a) as being unpatentable over JP 11-100864 to Tanaka Hisao as modified by U.S. Patent No. 6,502,896 to Nakata et al. in view of U.S. Patent No. 3,692,083 to Swanson et al. further in view of U.S. Patent No. 4,035,016 to Ricca.

Examiner Interview

The courtesy of the Examiners at an interview with Applicants' undersigned attorney is greatly appreciated. The substance of the interview is believed accurately set forth in the Interview Summary issued by Examiner Melissa Black at the conclusion of the interview and in the remarks which follow. In substance, the prior art Hisao JP11-100864 reference was discussed as well as amendments to claim 1 to more specifically define the folding doors.

Patentability of the Claims

The present invention is directed to a problem unique to a folding type door which is comprised of a pair of door panels in that with this type of folding door the panels easily rattle when the door is kept in a fully open position. The rattling also causes deterioration of the hinges.

Claim 1 has been amended to further define the two paneled folding door as having the first door panel and the second door panel being freely connected to each other as to be freely movable with respect to each other during a folding movement. Claim 1 has also been amended to further define the two paneled folding doors as forming a substantially continuous arc. With this construction the door fits neatly into the side wall of the cab as shown in Fig. 7 and maximizes the room inside of the cab.

The folding type door of the present invention is also provided with two catch members and two holding members. This makes it possible to prevent the folding type door from rattling and while keeping the folding type door in a fully open position against the outside side wall of the cab. Each door is provided with a separate holder member and two catch members are provided which are located in spaced fore and rear positions on the left rear side section of the cab box to be attachably or detachably engaged with the first and second holder members. The addition of a door cushion member as defined in claims 6 and 7 further prevents the doors from rattling when they are in an open position since the resilient member of the door cushion member functions to cushion the folding type door against rattling.

As discussed hereafter, the Hisao reference includes a shaping means which is connected between the two folding door panels and which does not permit free folding movement between the two door panels. Moreover, the Hisao construction

does not permit the door to have the shape of a continuous arc. In addition each of the Hisao and Ayabe references only discloses a folding door with one catch member and one holder member and the Nakata reference only discloses a single door with a single locking element on the door and a cooperating single locking device on the cab. Moreover, none of the cited prior art references discloses the use of a cushion member in combination with two holder members and two catch members as in Applicants' invention.

Swanson et al. relates to a folding door assembly and only illustrates in Fig. 4 a small rectangular box shape on vertical wall 24. The box is not at all discussed in the specification. Ricca relates to a single door holding assembly having a pair of spaced plates 30 having a vertical plate 32 at one end provided with a cushion 34. The cushion 34 and plate 32 are not mounted on a left rear side section of a cab as called for by claim 6.

With further regard to the cited prior art, Hisao, JP 11-100864 (Hisao) discloses a rotatable working machine mounting a cabin 12 on a revolving frame 8, and having an openable and closeable door 32 on an opening 31 formed in a left side of the cabin 12. The door 32 is comprised of a first door panel 34 and a second door panel 35. Only a single engaging member 41 is provided on the second door panel 34 and only a single locking mechanism 40 is provided on the outer peripheral side of the cabin 12. The first and second door panels also are connected by a shape keeping means 43 on the inside of the door which includes a gas damper. Handrail members 42 also protrude significantly into the interior of the cab. Moreover, the two door panels with the shape keeping means are bent with respect

to each other and therefore do not form a substantially continuous arc as in the present invention.

Nakata et al., U.S. Patent No. 6,502,896 (Nakata) discloses a working vehicle comprising an openable and closeable door 32 attached to an opening 31 of a cab 12. Only a lock element 36 is provided on the door 32 and only a single locking device 41 is provided on a side panel 37 of the cab 12. The first and second door panels are also connected by a shape keeping means 43 on the inside of the door which includes a gas damper. Handrail members 42 as protrude significantly into the interior of the cab. Moreover, the two door panels with the shape keeping means are bent with respect to each other and therefore do not form a substantially continuous arc as in the present invention.

Ayabe et al., U.S. Patent No. 6,669,272 (Ayabe) discloses a door 15 provided on the left side of a cabin 8 which door is foldable by connecting a rear door 15a and a front door 15b with hinges 24. Furthermore, Ayabe discloses the hinges 24 covered by a sealing member 27.

On page 3 of the Office Action, the Examiner states that it would have been obvious to one with ordinary skill in the art to use the catch and holder on the first door panel as taught by Nakata et al. on the device of Hisao in order to prevent the first holding door panel from rattling off the left rear side section of the cab box and make the panel follow along with the curve of the side section.

Applicants respectfully submit, however, that the Examiner has not fully understood Hisao. In Hisao, the rattling of the first folding door panel does not occur off the left rear side section of the cab box (cabin), for the following reasons.

The invention as defined in a translation of claim 2 of Hisao is “A door structure of a turning working machine according to claim 1, wherein the back part in the outside face located behind an opening (31) of a cabin (12) is formed in a curved shape which inclines toward the center side as going backward, and a door (32) further has a shape-keeping means (43) for keeping the shape of the door (32) released from a lock mechanism (39) for a totally enclosing in a recurved shape along the back part in the outside face of the cabin (12).”

Further, Hisao describes in paragraph [0023] that “Incidentally, handrail members 42, each of which is in the form of an approximately U-shaped frame when viewed in plane, are protruded on the inside faces of the first and second door panels 34 and 35, respectively. The door 32 further has a shape-keeping means 43 for keeping the shape of the door 32 released from the first lock mechanism 39 in a recurved shape along the back part in the left-side face of the cabin 12. In the embodiment, a gas damper disposed between the first and second door panels 34 and 35 is used as a shape-keeping means 43.”

Furthermore, Hisao describes in paragraph [0024] that “Namely, the gas damper 43 is disposed between the first and second door panels 34 and 35 in such a manner that the base end part of an air cylinder 44 of the gas damper 43 is rotatably attached to a first bracket 45 arranged on the inner-face side of the first door panel 34, and the tip part of a cylinder rod 46 moving out of or into the air cylinder 44 is rotatably attached to a second bracket 47 arranged on the inner-face side of the second door panel 35. The gas damper 43 keeps pressing the second door panel 35 toward the outside of the cabin 12 so as to curve the second door panel 35 outward with respect to the extended line of the first door panel 34.”

In this manner, the second door panel (35) of Hisao is pressed by the gas damper (43) in such a way that the second door panel (35) is kept so as to be curved outward with respect to the extended line of the first door panel (34). When the first lock mechanism (39) for the door (32) is unlocked, and then, the door (32) is opened, the gas damper (43) prevents the second door panel (35) from becoming free, and keeps the shape of the door (32) in a recurved shape. In this state, if the door (32) is further widely opened, the catch member (41) is easily locked in the holder member (40).

In addition, the gas damper (43) also functions to retain the second door panel (35) at a ventilating position D (see Fig. 1) in order to ventilate the interior of the cabin (12). Thus, the gas damper (43) exerts a force to the first door panel (34) and the second door panel (35) in a direction whereby the door panels (34) and (35) are curved toward the side of the ventilating position D. Therefore, rattling of the first door panel (34) does not occur off the left rear side section of the cabin (12).

Consequently, it is not necessary for Hisao to add any means for preventing the occurrence of rattling since the use of the gas damper (43) prevents such rattling. Thus, there are no problems of the occurrence of rattling in Hisao in the first place. Therefore, any motivation, teaching or suggestion of adding a means for preventing the occurrence of rattling, such as the catch member (36) and the holder member (41) of Nakata et al., to the first door panel (34) of Hisao, cannot be obtained from Hisao or the combination of Nakata et al and Hisao. Furthermore, Hisao actually teaches away from the present invention by the use of the gas damper (43).

There are also other differences between Hisao and the present invention. In Hisao, the gas damper (43) is arranged on the inside of the door (32). When the door (32) is in a totally enclosing state (i.e, it is completely closed), the resident space in the cabin (12) becomes small because of the inward protrusion of the gas damper (43) and the handrail members (42). Meanwhile, when the door (32) is in a totally open state (i.e. it is completely opened), the gas damper (43) is positioned on the outside of the door (32) in a diameter direction. In this state, the revolving radius is increased by the degree of the outward protraction of the gas damper (43).

In contrast to this, in the present invention, a first holder member is arranged on the outside of the first door panel. Therefore, when the door is in a totally closed state to form a substantially continuous arc coinciding with the vertical plane of the side wall, the resident space in the cab box becomes large. When the door is in a totally open state, no protruding structure appears on the outside of the door in the diameter direction, and therefore, the revolving radius decreases.

It is further noted that claim 1 of the present application calls for "said folding type door being located substantially in the same vertical plane as said side cover". As shown in Fig. 1 of Hisao, the door 32 has handrail members 42 which protrude a significant distance into the interior of the cabin 12 along with the shape keeping means 43. The handrail members are part of the door 32 and therefore the door structure of Hisao does not meet the limitation of the "door being located substantially in the same vertical plane" as the side cover of the cabin 12.

Thus, Hisao and the present invention differ from each other in many significant respects. Moreover, there are no suggestions in either Hisao or Nakata et

al. of combining their teachings in the manner done so by the Examiner. Therefore, claim 1 and claims 2, 3 and 5-7 depending therefrom are patentable.

As mentioned above, none of the three references disclose a construction of a two paneled door formed in a substantially continuous arc and being freely movable in a construction providing holding members separately on each door panel of the folding type door while providing two catch members located in spaced fore and rear positions of the cab box as is the present invention. Neither do any of these references disclose such a construction in combination with a door cushion member as called for in new claims 6 and 7.

Moreover, as noted in Nakata at page 2, col. 4, lines 54-56, the lock element 36 and the locking device 41 are only to keep the single panel door fully opened.

Also, in Hisao, the engaging member 41 and the lock mechanism 40 of Hisao are also only a way to keep a door 32 at a fully opened position.

Consequently, combining an invention providing one door panel, a holding member and a catch member as in Nakata with an invention providing two door panels, a holding member and a catch member as in Hisao, does not achieve the construction and advantages of the invention as now claimed. The claims are therefore patentable.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants contend that the above-identified application is now in condition for allowance. Accordingly, reconsideration and reexamination are respectfully requested.

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Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.

/Gene W. Stockman/
Gene W. Stockman
Registration No. 21,021

GWS/na
(703) 684-1120